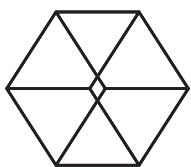


POSITION PAPER
of the Consortium
of the Extended Reality
Associations in Germany



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INTRODUCTION

The "comprehensive digital awakening" demanded in the coalition agreement of the new federal government has appealed to us as a consortium of German professional associations for Extended Reality (XR) to become active. In this position paper, we formulate our conviction that immersive technologies of extended reality, such as virtual reality (VR) and augmented reality (AR), play an important role in the digitization of science, business, society, culture and education in Germany.

The corona pandemic showed the potential of immersive technology applications - both in the private and professional sector. The general development of extended reality on a global level and the current discussion about the so-called "metaverse" also emphasize the need to deal intensively with the topic in Germany as well.

We therefore call for specific measures to be initiated now and implemented in a timely manner in order to accelerate the required digital awakening, to ensure the digital future viability in Germany as a whole and to create the appropriate framework conditions for this.

CLASSIFICATION

Immersive technologies are basically not a new phenomenon but are based on decades of developments that have been driven by different innovations over the past five to ten years. On the one hand there are hardware manufacturers who deal with processors, graphics cards and HMDs (Head-Mounted Displays), among other things.

On the other hand, the development of software manufacturers who work with real-time video, game engines, animation and simulation software, among other things, was pushed. Technologies such as 5G, artificial intelligence (AI), quantum computing, lidar scanning also play a role in this process. Ultimately, it is also about the desire and the need to transfer digital infrastructures from the 2D world to the 3D world.

In order to be able to clearly classify the sometimes complex structures of immersive technologies, a general explanation of the terms is required (see glossary in the appendix).

THE XR INDUSTRY in Germany and in global comparison

The XR industry in Germany is already highly innovative and growing. According to a recent study "Cross Reality in Germany 2021"¹, there are currently 1,353 companies in Germany that are involved in the development and production of extended reality. Geographically, there is a clustering in the metropolitan regions of Berlin, Hamburg, Munich, Rhineland and Stuttgart.

Overall, the study puts the total turnover of the industry in 2020 at around 400 million EUR. This roughly corresponds to the sales level of German games producers. According to another study, it is expected for 2024 that VR hardware and content in Germany will generate sales of 530 million EUR and AR/MR sales of around 265 million EUR.²

1 https://medien.nrw/wp-content/uploads/sites/8/2021/10/XR-Studie-DE-2021_RZ_websiteversion.pdf

2 <https://www2.deloitte.com/de/de/pages/technology-media-and-telecommunications/articles/extended-reality-xr-studie-2020.html>

What is special about the XR industry is that it consists of different players who work at the interfaces to different industries. So there is no easy to define cluster of companies with related products and activities.

In this context, it should be noted that there are various clubs, associations and institutions that work for the interests of the XR industry in Germany. Since the XR technologies and their possibilities are still relatively unknown in this country, all players in the XR industry still have to do a lot of educational work and pioneering work. In a European comparison, Germany, France and Great Britain are numerically the most important locations due to their economic power.³

In a global context, it can be said that VR and AR enthusiasts in Europe are currently primarily dependent on hardware from Asia and the USA..

SCIENTIFIC INNOVATION FIELDS

Universities and research have several functions in the XR industry. The majority of training in the XR area takes place at the universities.

There are already initial successes in the cooperation with the Federal Institute for Vocational Training (BIBB) and the XR associations to offer company training as a “designer for immersive media” as a training occupation in the dual system. This is quite attractive for the industry, as it also makes non-academic employees available for the job market.

In addition, research fields in the technical, but also in the educational and social context, are important innovation drivers. The range of research with or about XR corresponds to the complexity of the research landscape.

3 <https://xreuropepotential.com/assets/pdf/ecorys-xr-2021-report.pdf>

DEMANDS

Reinforcement of digital infrastructure

Infrastructure in general, and this also applies to a digital infrastructure that is currently being consolidated, must be openly designed and offered. Not free, but accessible to all.

Standards und intersections⁴ represent the basic conditions for innovation in open networks, as represented by our industry.

For a successful XR industry in Germany, the country must also be gigabit-capable. Efficient broadband connections and a strong 5G network are important.

Sustainable promotion of the XR industry in Germany

The need for qualified workers is enormous in the rapidly developing XR industry. Appropriate training programs should be planned and implemented with foresight.

Graduates should be supported in founding start-ups, and the transition to working life should be accompanied in order to avoid emigration abroad.

Collaboration between XR companies and economy

We appreciate the fact that the coalition agreement calls for using the potential of digitization for more sustainability, e.g. by promoting digital, virtual twins in order to reduce the consumption of resources.⁵

The use of XR products and solutions also results in further advantages for the economy to work more sustainably and cost-effectively. The use of XR also opens up new markets that are developing analogously or virtually, as in the case of the so-called "Metaverse".

In order to be able to fully exploit this potential, SMEs in particular must be informed about the potential of XR through systematic work and motivated through special funding programs for the development, use and application of XR. An affiliation to existing economic clusters makes sense.

Use of XR for more intensive and digital learning

As the past few years have clearly shown, the digitization of education offers opportunities that must be used and further expanded in the future in order to ensure that education can be accessed across the board for everyone. XR technologies can be used in school, in training and in further education to convey learning content intensively and sustainably.

In the area of staff training, many companies have already recognized the potential of VR and AR. In order to further advance the application of XR technologies in the context of school and training, XR experts should be brought into contact with proven education experts in order to jointly develop and test applications.

A central platform, on which calls for bids or offers in this area can be shared, would be desirable.

4 https://xr4all.hhi.fraunhofer.de/index.php/Landscape_Research_Report#Standards

5 https://www.spd.de/fileadmin/Dokumente/Koalitionsvertrag/Koalitionsvertrag_2021-2025.pdf, S. 18

Promotion of XR in art and culture

Art and culture play a central role in our society. The use of XR offers innovative ways to create, convey and experience content. XR also offers an opportunity to attract new audiences by embracing the changing conditions brought about by ongoing digitization.

In order to be able to exploit the full potential, the application and further development of new technologies in the context of the art and culture sector should be specifically promoted and supported. There should be more special funding for XR projects, for which not only institutions but also freelance actors from the creative industry can apply to create immersive experiences using XR and in close cooperation with existing institutions, such as museums or festivals, accessible close.

Improving diversity in the XR industry

It is a global concern that the diversity of society is also reflected in the world of work, the virtual world and in technology. In order to achieve this goal, it must be ensured that entry into the XR industry is made possible for people from different backgrounds. In this context, particular attention should be paid to female founders & investor programs. We appreciate the fact that, according to the coalition agreement, the proportion of female founders in the digital sector is to be increased by creating a female founder grant.⁶

Also in the context of the so-called “metaverse” that is currently developing, attention must be paid to the topic of diversity and inclusion.⁷ Specifically, we demand technology companies to pay attention to diversity when hiring and to consider the topic as an important part of their future strategy.

Clarity in the definition of legal framework conditions

Both designers and users need security when developing and using Extended Realities. Framework conditions based on European values should be created that grant security and trust in business and society and at the same time set new quality standards. To this end, we call for close cooperation with the Ethics Council and the responsible authorities for the GDPR (General Data Protection Regulation of 2016) and other responsible regulatory authorities in order to discuss and jointly define basic conditions.

OUTLOOK

Digitization is a process that the XR industry would like to help shape in dialogue with other partners. In order to have an influence on the developments and the framework of future technologies and their implementation as well as possible applications, it is important that the role of XR as a future technology is recognized and that experts from our industry are actively involved in the design processes.

Through a regular exchange and in dialogue with other stakeholders, we can shape the future together, which will not only, but also, unfold in virtual places like the so-called "Metaverse". With a strategic approach, the opportunities that arise with the use of XR in terms of sustainability, accessibility and innovation can be used in a target-oriented manner and based on ethically tested principles.

6 https://www.spd.de/fileadmin/Dokumente/Koalitionsvertrag/Koalitionsvertrag_2021-2025.pdf, S. 19

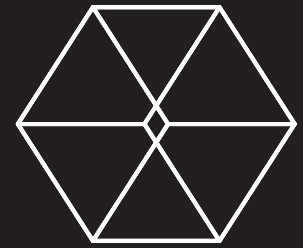
7 <https://www.ristband.co/press>

BRIEF INTRODUCTION OF THE ASSOCIATIONS

Erster Deutscher Fachverband für Virtual Reality e.V. (EDFVR)

In the EDFVR e.V., startups and established entrepreneurs, enthusiasts and developers from the XR industry come together all over Germany. As an umbrella organization, the task is to promote the new digital realities in Germany, to network the scene in Germany and to represent it abroad.

<https://www.edfvr.org>



Extended Reality Bavaria e.V. (XRB)

The XRB was founded in 2019 as the independent professional association in Bavaria for players in immersive technologies. It aims at strengthening the regional XR economy, active international networking and the promotion of local communities.

<https://www.xrbavaria.de>



nextReality.Hamburg e.V.

nextReality.Hamburg connects talents, interested parties and experts at the location and beyond. Together with educational and research institutions and Hamburg companies, work is being done to strengthen and advance Hamburg as an XR location.

<https://nextreality.hamburg>



Virtual Dimension Center e.V. Fellbach (VDC)

The VDC is Germany's leading competence network for virtual engineering. Technology suppliers, service providers, users, research institutions and multipliers work together in the VDC network along the entire value chain.

<https://www.vdc-fellbach.de>



Virtual Reality Verein Berlin Brandenburg e.V. (VRBB)

The VRBB is a publicly funded association on the subject of XR and supports the growing industry of immersive technologies in the capital region. It was founded in 2016 and has around 80 members and partners.

<https://virtualrealitybb.org>



GLOSSARY

XR (Extended Reality) is the overall term for all immersive technologies that create computer-generated environments and objects and combine them with the real world.

VR (Virtual Reality): With VR, the key factor is that the real world is completely hidden and users are completely immersed in the virtual world. This effect is created by computer-generated worlds that are visible via a so-called head-mounted display (HMD) or VR glasses.

AR (Augmented Reality/ Erweiterte Realität) differs fundamentally from virtual reality, as the real world always remains visible. The technology inserts digital objects and content into the real world, thereby augmenting it. In addition to AR glasses and data glasses, the interfaces for using AR are also smartphones and tablets. Among other things, augmented reality can be made visible on modern smartphones with few technical requirements.

MR (Mixed Reality): The distinction between mixed reality and augmented reality cannot always be clearly described. With MR, the references to virtual reality are generally stronger than with AR. For example, the virtual elements can be interacted with using a powerful headset and controller or hand tracking.

360°: 360 video, immersive video or VR video Cinematic reality differs from other technologies in that the viewer sees recorded content and cannot influence it. This content is usually recorded as 360° videos with multiple or special cameras. With a 360° video, the entire environment is visible in all directions, which is where the name comes from. The viewers are at the center of the action and can experience video content from their own completely new perspective.

Immersion: Not just perceiving the medium, but grasping it as reality, is the highest level of immersion. Immersive media such as VR, 360° video and sometimes also AR differ from other media because the viewer is the center of the projection and interacts with it. This can be done through one's own movement, but also through interaction with the digital world or digital objects. The immersion is generated by visual, acoustic, kinaesthetic and haptic stimuli. Storytelling and interaction reinforce the successful integration into a digital reality.

Digital Reality was increasingly used as a term by Deloitte in 2015, but has never achieved the same status as XR, MR or the Metaverse in broader communication.

XR Industry: This designation covers a diverse range of stakeholders, professional groups and industries: developers, researchers and designers as well as users and distributors, and established companies, start-ups and research institutions.